



Year 6: Fractions, decimals and percentages.

Name: _____

Class: _____

Date: _____

Time:

Marks: **31 marks**

Comments:

1

Amina's bed is 190 cm in length and 91 cm in width.

She is making a **one-tenth** scale model of the bed.

What are the length and width of Amina's model?

length = cm

width = cm

1 mark

2

Write the missing number to make this **division** correct.

$$75 \div \boxed{} = 7.5$$

1 mark

3

Tick the fractions **less than** $\frac{5}{8}$

$\frac{1}{2}$

$\frac{2}{8}$

$\frac{3}{4}$

$\frac{7}{16}$

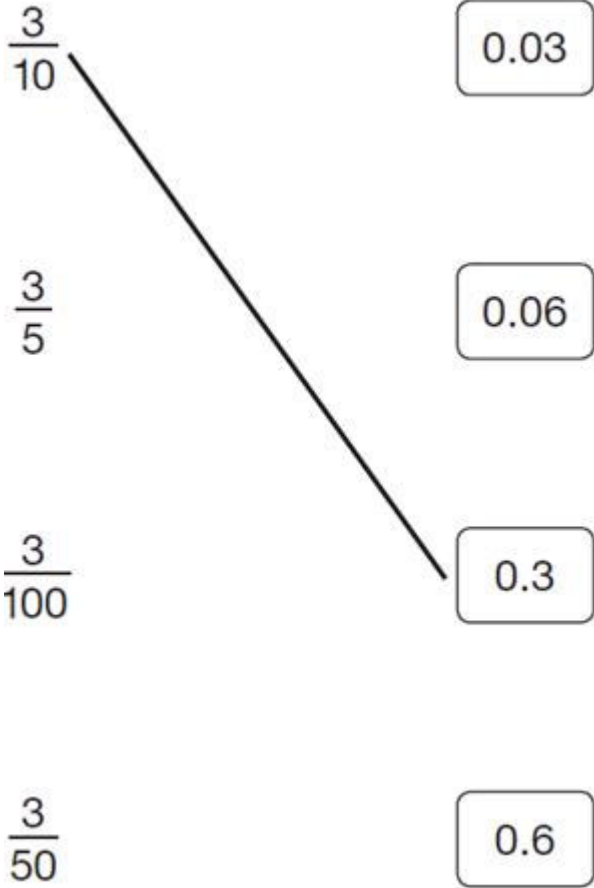
$\frac{24}{32}$

2 marks

4

Join each fraction to the correct decimal card.

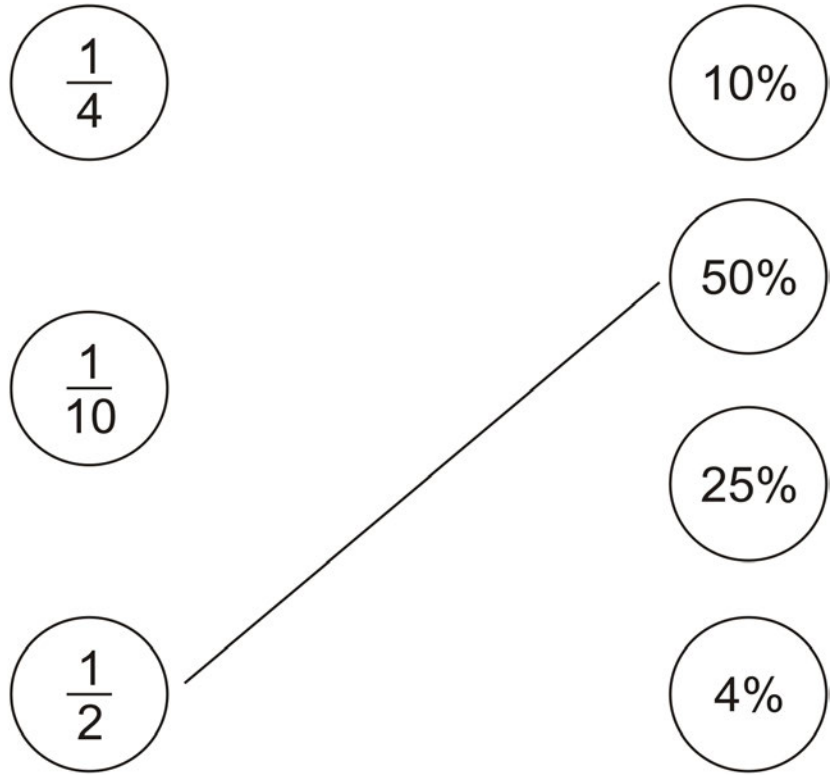
The first one has been done for you.



1 mark

5

Draw a line to join each fraction to a percentage of the same value.



1 mark

6

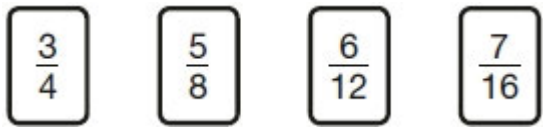
Circle the improper fraction that is equivalent to $6\frac{7}{8}$

- $\frac{67}{8}$ $\frac{48}{8}$ $\frac{62}{8}$ $\frac{55}{8}$ $\frac{76}{8}$

1 mark

7

Here are four fraction cards.



Use any **three** of the cards to make this correct.



1 mark

8

1 gallon is 4.546 litres.

How many litres are needed to fill a 10 gallon tank?

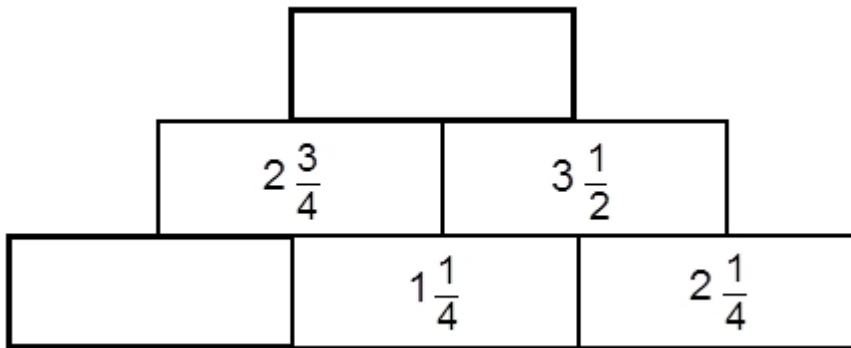
litres

1 mark

9

In this diagram, the number in each box is the **sum** of the two numbers below it.

Write the missing numbers.



2 marks

10

Match each percentage to its correct decimal equivalent.

2%

0.2

0.06

62%

0.62

0.02

60%

0.062

0.6

1 mark

11

Here are six cards.

$\times 10$	$\times 100$	$\times 1000$
$\div 10$	$\div 100$	$\div 1000$

Use a card to complete each calculation.

$$5.3 \quad \boxed{} = 0.53$$

$$5.3 \quad \boxed{} = 5300$$

$$5.3 \quad \boxed{} = 0.053$$

2 marks

12Complete these fractions to make each equivalent to $\frac{3}{5}$

$$\frac{\boxed{}}{10}$$

$$\frac{\boxed{}}{15}$$

$$\frac{12}{\boxed{}}$$

1 mark

13

Jack has £400

He spends **35%** of his money on a new bike.



How much does Jack spend on his new bike?

£

1 mark

14

Amy did a survey of what time people get up on a Sunday morning.

This table shows her results for 150 people.

Time	number of people
before 7 am	13
7:00 am to 7:59 am	28
8:00 am to 8:59 am	59
9:00 am to 9:59 am	36
10 am and after	14

Look at the table.

How many people get up at **8 am or later**?

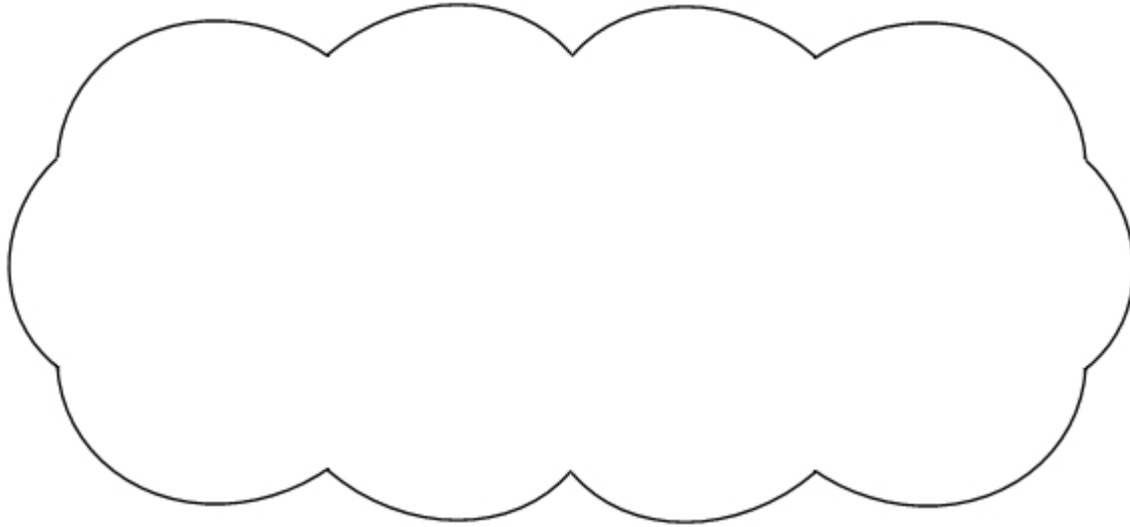
1 mark

Amy says,

'Two-thirds of the 150 people in the survey get up before 9 am.'

Amy is correct.

Explain how you know.



1 mark

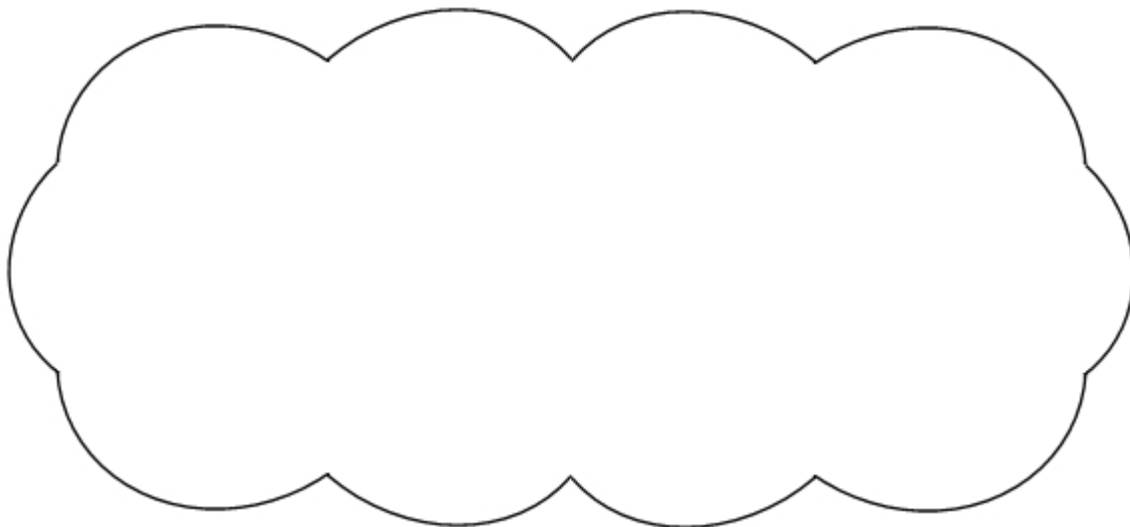
15

Liam did a survey of 55 people to see how many were left-handed.

Liam says,

'The results show that exactly 10% of the people in the survey are left-handed.'

Explain why Liam cannot be correct.



1 mark

16Tick the fractions that are **equal** to 20%.

$$\frac{1}{20} \quad \square$$

$$\frac{20}{40} \quad \square$$

$$\frac{1}{5} \quad \square$$

$$\frac{3}{15} \quad \square$$

$$\frac{2}{100} \quad \square$$

2 marks

17

Amina asked 60 children to choose their favourite flavour of jelly.

These were her results.

Flavour	Number of children
Raspberry	12
Lemon	8
Orange	15
Blackcurrant	25
Total	60

What **percentage** of the 60 children chose orange?

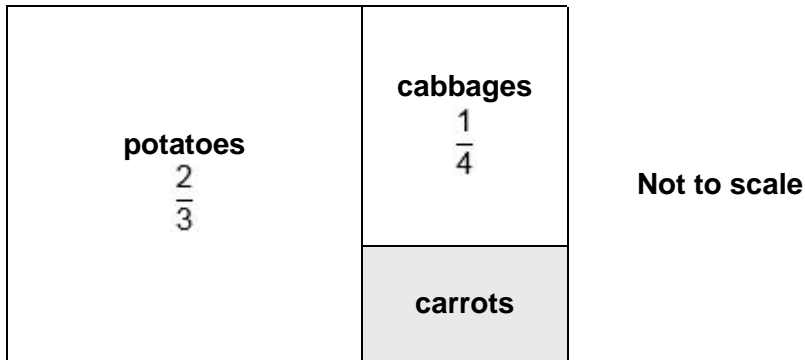
%

1 mark

18

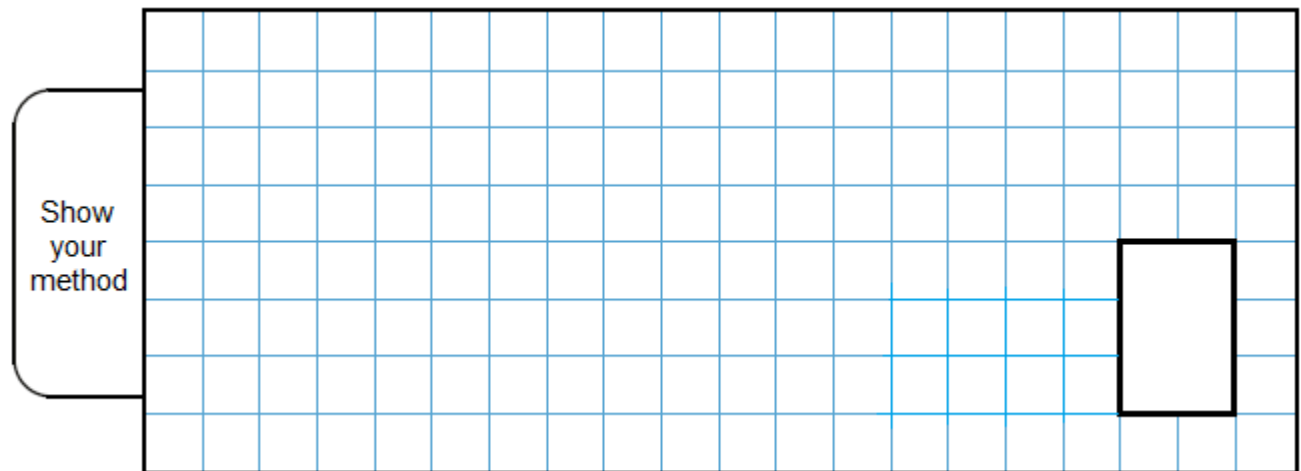
This is a diagram of a vegetable garden.

It shows the fractions of the garden planted with potatoes and cabbages.



The remaining area is planted with carrots.

What **fraction** of the garden is planted with carrots?



2 marks

19

$$33,630 = 354 \times 95$$

Use this multiplication to complete the calculations below.

$$354 \times 9.5 =$$

$$3,540 \times 95 =$$

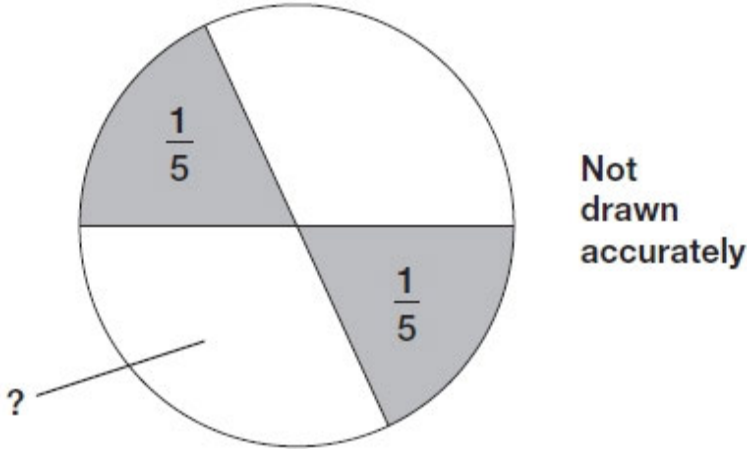
$$3,363 \div 95 =$$

2 marks

20

In this circle, each shaded part is $\frac{1}{5}$ of the area of the circle.

The two white parts have equal areas.



What fraction of the circle is **one** of the white areas?

Show your method

2 marks

21

Write a **fraction** which is **greater than 0.7** and **less than 0.71**

1 mark

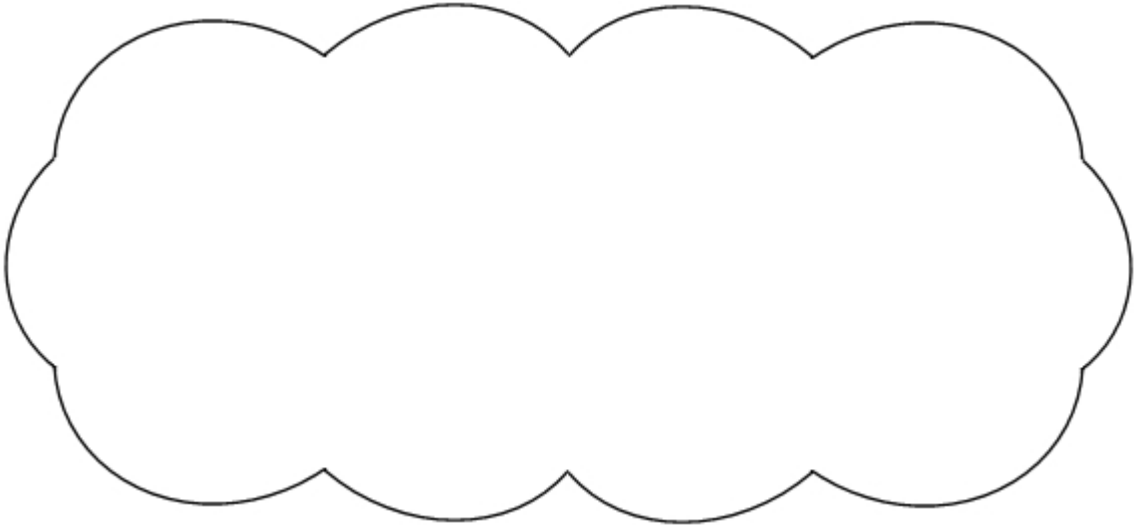
Write a **decimal** which is **greater than $\frac{4}{7}$** and **less than $\frac{5}{7}$** .

1 mark

22

Anna says $\frac{4}{7}$ is greater than $\frac{5}{9}$

Explain why Anna is correct.



1 mark

Mark schemes

1

Award **ONE** mark for two correct answers, as shown:

length =

width =

[1]

2

10

[1]

3

Award **TWO** marks for three boxes ticked correctly, as shown:

$\frac{1}{2}$

$\frac{2}{8}$

$\frac{3}{4}$

$\frac{7}{16}$

$\frac{24}{32}$

Award **ONE** mark for:

- only two boxes ticked correctly and no incorrect boxes ticked

OR

- three boxes ticked correctly and one incorrect box ticked.

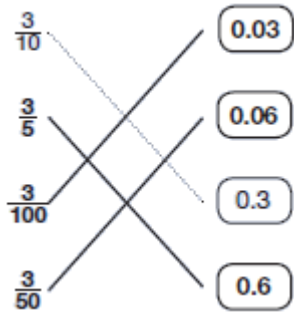
Accept alternative unambiguous positive indication of the correct answer, e.g. Y.

Up to 2m

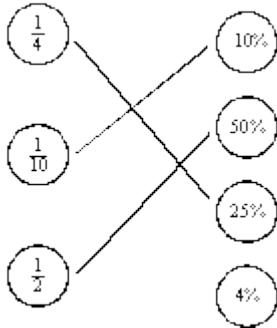
[2]

4

Fractions connected correctly to decimals as shown:



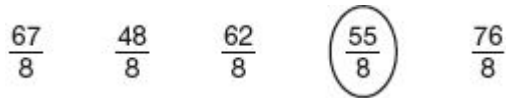
[1]

5*Both correct for 1 mark.*

[1]

6

Correct number circled, as shown:

*Accept alternative unambiguous positive indication of the correct answer, e.g. fraction ticked.*

[1]

7Award **ONE** mark for any of the following:

$$\frac{7}{16} < \frac{6}{12} < \frac{5}{8}$$

OR

$$\frac{7}{16} < \frac{6}{12} < \frac{3}{4}$$

OR

$$\frac{7}{16} < \frac{5}{8} < \frac{3}{4}$$

OR

$$\frac{6}{12} < \frac{5}{8} < \frac{3}{4}$$

Accept equivalent fractions correctly ordered, e.g:

$$\frac{21}{48} < \frac{24}{48} < \frac{30}{48}$$

$$\frac{21}{48} < \frac{24}{48} < \frac{36}{48}$$

$$\frac{7}{16} < \frac{10}{16} < \frac{12}{16}$$

$$\frac{12}{24} < \frac{15}{24} < \frac{18}{24}$$

[1]

8 45.46 litres

[1]

9 (a) $6\frac{1}{4}$

Accept equivalent fractions.

Do not accept $5\frac{5}{4}$

1

(b) $1\frac{1}{2}$

Accept equivalent fractions, eg

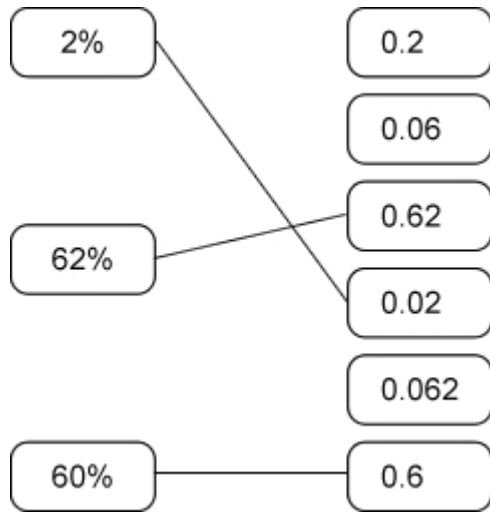
$1\frac{2}{4}$, $\frac{3}{2}$, 1.5, 150%

1

[2]

10

Award **ONE** mark for the percentages matched as shown:



[1]

11

Award **TWO** marks for all three calculations completed correctly, as shown:

5.3 $\boxed{\div 10}$ = 0.53

5.3 $\boxed{\times 1000}$ = 5300

5.3 $\boxed{\div 100}$ = 0.053

If the answer is incorrect, award **ONE** mark for two calculations correct.

Up to 2

[2]

12

Fractions completed as shown below:

$$\frac{\boxed{6}}{10} \qquad \frac{\boxed{9}}{15}$$

$$\frac{\boxed{20}}{12}$$

All three fractions must be correct for the award of the mark.

[1]

13

£140

Do not accept 140%

[1]

14

(a) 109

1

(b) An explanation that recognises that 100 people get up before 9am which is two-thirds of the total (150).

- '13 + 28 + 59 = 100 which is two-thirds of the total'
- ' $\frac{1}{3}$ of 150 = 50 and $2 \times 50 = 100$ '
- ' $\frac{2}{3}$ of 150 is 100'
- '36 + 14 = 50 which is one-third after 9am'
Do not accept vague or incomplete explanations, eg:
 - 'One-third are 9 o'clock or later'
 - '100 got up at 9am'
 - 'Twice as many got up before 9am.'
 - '13 + 28 + 59 = 100'

U1

[2]

15

An explanation which recognises that 10% of 55 is not a whole number, eg:

- '10% of 55 is $5\frac{1}{2}$, and you can't have $5\frac{1}{2}$ people'
- 'It wouldn't be a whole number of people'
- 'No whole number out of 55 will give you 10%'
- 'If it was 5 people, 5 out of 55 isn't 10%.
6 out of 55 isn't 10% either'
- 'Because you can't have half a person.'
- ' $5\frac{1}{2}$ '

Do not accept vague or incomplete explanations, eg:

- 'You can't get 10% of 55'
- 'Some children write with both hands.'

U1

[1]

16Award **TWO** marks for two boxes ticked correctly, as shown:

$\frac{1}{20}$

$\frac{20}{40}$

$\frac{1}{5}$

$\frac{3}{15}$

$\frac{2}{100}$

If the answer is incorrect, award **ONE** mark for:

- only **ONE** box ticked correctly and no incorrect boxes ticked
- **TWO** boxes ticked correctly and **ONE** incorrect box ticked.

Accept alternative unambiguous positive indication of the correct answer, e.g. Y.

Up to 2m

[2]**17**

25

[1]**18**Award **TWO** marks for the correct answer of $\frac{1}{12}$ or an equivalent fraction.If the answer is incorrect, award **ONE** mark for:

- sight of $\frac{11}{12}$

OR

- evidence of appropriate method, e.g.

- $\frac{2}{3} + \frac{1}{4}$

$$\frac{8}{12} + \frac{3}{12} = \frac{10}{12} \text{ (error)}$$

$$1 - \frac{10}{12} =$$

- $1 - \frac{2}{3} - \frac{1}{4} =$

*Answer need not be obtained for the award of **ONE** mark.*

Up to 2m

[2]

19Award **TWO** marks for numbers completed, as shown:

$$354 \times 9.5 = \boxed{3,363}$$

$$3,540 \times 95 = \boxed{336,300}$$

$$3,363 \div 95 = \boxed{35.4}$$

Award **ONE** mark for any two numbers completed correctly.**Do not** accept transcription errors or misreads for this question.

Up to 2m

[2]**20** $\frac{3}{10}$ or equivalent

Accept equivalent fractions, decimals or percentages

2

or

Shows or implies a complete correct method and no conceptual errors, eg:

- Shaded fraction is $\frac{1}{5} + \frac{1}{5} = \frac{2}{5}$

$$\text{Fraction of total white area} = 1 - \frac{2}{5} = \frac{3}{5}$$

$$\frac{3}{5} \div 2$$

- $\frac{1}{5} + \frac{1}{5} = 20\% + 20\% = 30\%$ (error)

White area = 70%

Each white area = 35%

*! 30 with no % sign**Accept for 1m as evidence of a correct method*

$$! \frac{1.5}{5} \text{ or } \frac{1\frac{1}{2}}{5}$$

*Accept for 1 as evidence of a correct method**(incorrect notation for $\frac{3}{5} \div 2$)*

Do not accept conceptual errors seen, eg:

- $\frac{1}{5} + \frac{1}{5} = \frac{2}{10}$
- $\frac{1}{5} + \frac{1}{5} = 5\% + 5\% = 10\%$
- $\frac{6}{10} \div 2 = \frac{3}{5}$

1

[2]

21

(a) Any fraction greater than $\frac{7}{10}$ AND less than $\frac{71}{100}$, eg:

- $\frac{141}{200}$

Accept decimal fractions which fit the criteria, eg:

- **0.705**

1

(b) Any decimal greater than 0.571428 recurring
AND less than 0.714285 recurring, eg:

- 0.6

Do NOT accept non-decimal fractions, eg:

- $\frac{9}{14}$ OR $\frac{4.5}{7}$

1

[2]

22

Gives a correct explanation that converts the given fractions to decimals **or** fractions with a common denominator / numerator **or** percentages, eg:

- $\frac{4}{7} = \frac{36}{63}$ but $\frac{5}{9} = \frac{35}{63}$
- $0.57142\dots > 0.55555$
- Because there is a $\frac{1}{63}$ difference between the two

For $\frac{4}{7}$ accept:

- **0.57(...)** **or** **57(. ...%)**

For $\frac{5}{9}$ accept:

- **0.56** **or** **0.55(...)** **or** **56(%)** **or** **55(. ...%)**

Accept minimally acceptable explanations, eg:

- $\frac{36}{63}$ $\frac{35}{63}$
- 0.56 0.57

Do not accept incomplete explanations that fail to convert both fractions to a common format, eg:

- $\frac{4}{7}$ is 0.57 so it is bigger
- 9ths are smaller than 7ths and there is only one more 9th than 7th so $\frac{4}{7}$ is greater

! Condone method of conversion incorrectly expressed in an otherwise correct explanation, eg:

- $\frac{4}{7} \times 9 = \frac{36}{63}$

[1]